Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:
Oceanographic and physiological parameters relating to Heterosigma akashiwo in Puget Sound - The Ecophysiology and Toxicity of Heterosigma akashiwo in Puget Sound: A Living Laboratory Ecosystem Approach

1.2. Summary description of the data:
Over one half of the worlds fish production for human consumption currently comes from aquaculture, while wild fisheries yields are either stable or declining. Recurring threats from the raphidophyte, Heterosigma akashiwo Hada (Sournia) have caused extensive damage ($2-6 million per episode) to wild and net-penned fish of Puget Sound, Washington, and are believed to be increasing in scope and magnitude in this region, and elsewhere in the world over the past two decades. The mechanism of H. akashiwo toxicity is not well understood. The toxic activity of H. akashiwo has been attributed to the production of reactive oxygen species, brevetoxin-like compound(s), excessive mucus, or hemolytic activity; however these mechanisms are not confirmed consistently in all fish-killing events or cultured strains. The difficulty of conducting research with active, toxin-producing field populations of H. akashiwo have resulted in conflicting findings from those obtained in lab culture studies, thereby limiting the ability of fish farmers to respond to these episodic blooms. Collaborators in this project are: Vera Trainer (NWFSC), William Cochlan (San Francisco State University), Charles Trick (University of Western Ontario), and Mark Wells (University of Maine). The overall goal of this project is to identify the primary toxic element and the specific environmental factors that stimulate fish-killing H. akashiwo blooms, and thereby provide managers with the fundamental tools needed to help reduce the frequency and toxic magnitude of these harmful algal events. Studies to date have provided incomplete and conflicting observations on the mode of toxicity and the environmental stimulation of toxification. We propose a three-pronged approach to study the environmental controls of H. akashiwo growth and toxin production; laboratory culture experiments, field observations, and bottle and mesocosm manipulation experiments.The project objectives are to: 1. identify the element(s) of toxic activity (inorganic, organic, or synergistic) associated with blooms of H. akashiwo and the various cellular morphologies of this alga, 2. determine the environmental parameters that stimulate the

growth success and expression of cell toxicity in the H. akashiwo populations of Puget Sound. Because previous studies have used H. akashiwo cultures with little or no toxic activity, our approach is to use a living laboratory to study H. akashiwo bloom ecology and toxicity using natural assemblages. Using a mobile lab at field sites where H. akashiwo cells are regularly found will enable us to fully characterize the toxic element(s) responsible for fish mortality, and the environmental factors influencing toxicity. Findings from annual field studies in June and two rapid response deployments during major bloom events will be confirmed using laboratory studies with fresh (6 mo. old) isolates. The expected results are: 1. determination of the key elements of toxicity of H. akashiwo, 2. characterization of the environmental variables that influence either the induction or depression of elements of toxic activity in H. akashiwo, 3. characterization of environmentally-induced metabolites corresponding to condition of toxin production (metabolomics) and 4. design of a strategy for realistic mitigation of H. akashiwo activities in Puget Sound, Washington. This is a stand-alone project funded for 3 years through the NOAA/NSF ECOHAB program.

Contains oceanographic parameters such as temperature, salinity, density, fluorescence and nutrient concentrations. Also contains information on the toxic elements of Heterosigma akashiwo and physiological conditions related to observed toxic effects.

1.3. Is this a one-time data collection, or an ongoing series of measurements?

One-time data collection

1.4. Actual or planned temporal coverage of the data:

2010-10-01 to 2013-09-30, 2010-10-01 to 2013-09-30, 2010-10-01 to 2013-09-30, 2010-10-01 to 2013-09-30

1.5. Actual or planned geographic coverage of the data:

W: -122.3062, E: -122.3062, N: 47.6449, S: 47.6449
NWFSC Montlake

W: -122.8963, E: -122.8963, N: 48.6644, S: 48.6644
East Sound, Orcas Island

W: -123.0144, E: -123.0144, N: 48.5458, S: 48.5458
Friday Harbor Laboratories

W: -125.3893, E: -119.9604, N: 50.5101, S: 47.0437
US Waters of Puget Sound/Georgia Basin

1.6. Type(s) of data:

(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

Table (digital)

1.7. Data collection method(s):

(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

Instrument: In-Situ Instrument - In-Situ Instrument (not specified), Sonde and Probe - Conductivity, Temperature, and Depth
Platform: Platform Not Applicable
Physical Collection / Fishing Gear: Animal and Plant Collection Device, Animal and Plant Collection Device - Plankton Collection Device - Plankton Net, Water Sampler Bottle - Surface Sample Bottle

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
Northwest Fisheries Science Center (NWFSC)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
Northwest Fisheries Science Center (NWFSC)

2.4. E-mail address:
nmfs.nwfsc.metadata@noaa.gov

2.5. Phone number:
206-860-3200

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:
Nicolaus G Adams

3.2. Title:
Data Steward

4. Resources
Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?
No

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):
0

5. Data Lineage and Quality

NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

(describe or provide URL of description):

Lineage Statement:
NA

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

These data were collected and processed in accordance with established protocols and best practices under the direction of the project's Principal Investigator. Contact the dataset Data Manager for full QA/QC methodology.

6. Data Documentation

The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?

Yes

6.1.1. If metadata are non-existent or non-compliant, please explain:

6.2. Name of organization or facility providing metadata hosting:

NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:

https://www.fisheries.noaa.gov/inport/item/17794

6.4. Process for producing and maintaining metadata

(describe or provide URL of description):

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access

NAO 212-15 states that access to environmental data may only be restricted when distribution is

explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

No

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

No

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

NA

7.2. Name of organization of facility providing data access:

Northwest Fisheries Science Center (NWFSC)

7.2.1. If data hosting service is needed, please indicate:

No

7.2.2. URL of data access service, if known:

https://www.webapps.nwfsc.noaa.gov/apex/parr/noaansf_ecohab_heterosigma_ctd/data/page/
https://www.webapps.nwfsc.noaa.gov/apex/parr/noaansf_ecohab_heterosigma_discreete_data/data/p
https://www.webapps.nwfsc.noaa.gov/apex/parrdata/inventory/tables/table/noaansf_ecohab_heteros
https://www.webapps.nwfsc.noaa.gov/apex/parrdata/inventory/tables/table/noaansf_ecohab_heteros

7.3. Data access methods or services offered:

At this time, contact the Data Manager for information on obtaining access to this data set. In the near future, the NWFSC will strive to provide all non-sensitive data resources as a web service in order to meet the NOAA Data Access Policy Directive (https://nosc.noaa.gov/EDMC/PD.DA.php).

7.4. Approximate delay between data collection and dissemination:

0 days

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

No Delay

8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:

(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

NCEI-MD

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):

Northwest Fisheries Science Center - Seattle, WA

8.3. Approximate delay between data collection and submission to an archive facility:

365

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

The Northwest Fisheries Science Center facilitates backup and recovery of all data and IT components which are managed by IT Operations through the capture of static (point-in-time) backup data to physical media. Once data is captured to physical media (every 1-3 days), a duplicate is made and routinely (weekly) transported to an offsite archive facility where it is maintained throughout the data's applicable life-cycle.

9. Additional Line Office or Staff Office Questions

Line and Staff Offices may extend this template by inserting additional questions in this section.